REMARKS

Favorable reconsideration of this application, in light of the preceding amendments and following remarks, is respectfully requested.

Claims 1, 3-13, and 15-17 are pending in this application. No claims have been added or amended and claims 31-33 have been cancelled. Claim 1 is the sole independent claim.

Abstract

Applicants have amended the Abstract in response to the Examiner's objection.

Rejections under 35 U.S.C. § 112, Second Paragraph

Claims 2-10, 12-13, 15-17 and 20-30 stand rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicant regards as the invention.

Claims 2 and 20-30 have been cancelled and there is no explanation for the rejections of 3-10, 12, 15-16. Therefore, the rejection to claims 2-10, 12, 15-16 and 20-30 is moot.

As to claims 13 and 17, Applicants respectfully submit that these claims further limit an apparatus and are in no way improper. For example, claim 17 is only further defining the group of gases that the first and second source gas may be selected from (e.g., lead (Pb) or compounds thereof). MPEP § 2173.05(f) states "a claim which makes reference to a preceding claim to define a limitation is an acceptable claim construction which should not necessarily be rejected as improper or confusing under 35 U.S.C. 112, second paragraph". See also *Ex parte Porter*, 25 USPQ2d 1144 (Bd. Pat. App. & Inter. 1992) where reference to "the nozzle of claim 7" in a method claim was held to comply with 35 U.S.C. 112, second paragraph.

Thus, Applicants respectfully request that the Examiner withdraw the rejection of claims 13 and 17.

Rejections under 35 U.S.C. § 102

Sakamoto

Claims 1, 3-5, 8, 10-12, 16 and 17 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Sakamoto et al, US Patent 5,968,593. Applicants respectfully traverse this rejection for the reasons detailed below.

Independent claim 1 recites "wherein the heating pipe has one end connected with the first supply pipe, the other end connected with the shower part, the heating pipe passing around the susceptor". Example non-limiting embodiments of this feature are discussed, for example, in paragraph [0049] and FIG. 2 of the instant specification. Sakamoto, as relied upon by the Examiner, fails to anticipate or suggest a heating pipe that has one end connected with the first supply pipe, the other end connected with the shower part, and the heating pipe passing around the susceptor as recited in independent claim 1.

On page 9 of the Office Action, the Examiner states that the gas supply pipes 311 and 312 act as heating pipes and that gas supply pipes 91 and 92 are the separate gas supply pipes. Applicants respectfully submit that Sakamoto does not have separate gas supply pipes, because gas supply pipes 91 and 92 are the gas feeding pipes in the second embodiment illustrated in FIG. 4 and 311 and 312 are the gas feeding pipes in the ninth embodiment illustrated in FIG. 13. These are not different gas feeding pipes, but rather different reference numerals directed to the same gas feeding pipes in different figures.

Also, Applicants can find no reference to the gas feeding pipes also serving as heating pipes. Column 10, lines 40-43 of Sakamoto states that the gas is cooled when flowing through

the gas feed pipes 311 and 312. The rest of the Examiner's explanation on page 10 of the Office Action does not have any support in Sakamoto and appears to be just a theory of how 311 and 312 could function as heating pipes.

The Applicants, therefore, respectfully request that the rejection to Claim 1 under 35 U.S.C. §102(b) be withdrawn.

In addition, independent claim 1 recites the first source gas flowing through the heating pipe heated by heat radiated from the susceptor. In column 8, lines 55-60, Sakamoto states that the gas is heated by the gas distribution chamber. Sakamoto further states that "gas supplied from the gas supply tube is preheated before it is led into the gas feed pipes". Therefore, the source gas in Sakamoto is not "heated by heat radiated from the susceptor" as in independent claim 1.

Further, the wafer of independent claim 1 is heated by the susceptor. In Sakamoto, the wafer is heated by a heater disposed outside the chamber. Therefore, there is no indication that the susceptor is hotter than the wafer in Sakamoto.

The Applicants, therefore, respectfully request that the rejection to Claim 1 under 35 U.S.C. §102(b) be withdrawn for these additional reasons.

Claims 3-5, 8, 10-12, 16 and 17, dependent on independent claim 1, are patentable for the reasons stated above with respect to claim 1 as well as for their own merits.

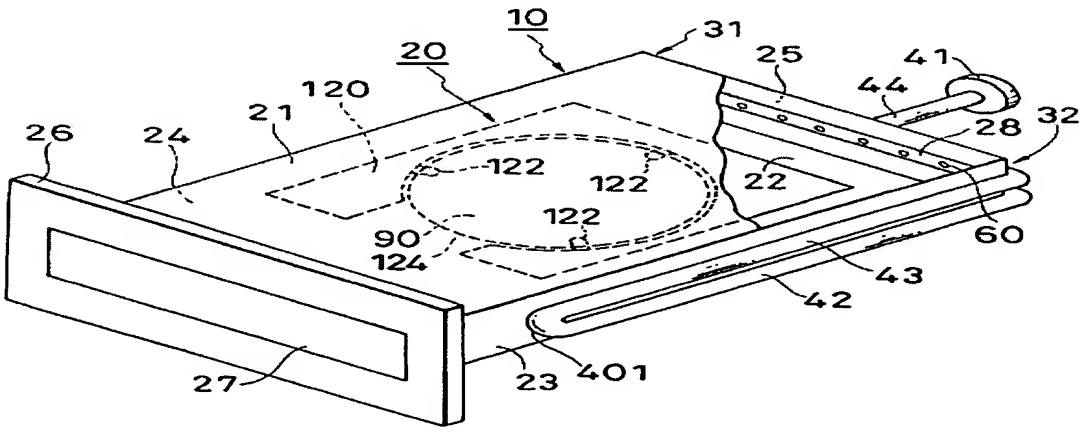
Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejection to independent claim 1 and all claims dependent thereon.

Inokuchi

Claims 1, 3, 10 and 16 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Inokuchi et al, US Patent 6,139,641. Applicants respectfully traverse this rejection for the reasons detailed below.

Inokuchi, as relied upon by the Examiner, fails to anticipate or suggest the heating pipe with one end connected with the first supply pipe, the other end connected with the shower part as recited in independent claim 1. The Examiner states that in Inokuchi the gas supply tube 44 is attached to heating tube 42, which is attached to heating tube part 401, which is attached to heating tube 43, which is attached to the shower part 28. However, independent claim 1 states that one end of the heating pipe is connected to a first supply pipe and the other end is connected to a shower part. As is clear from FIG. 6, the opening (shower part) 28 is located at the same end of the heating tube 42 as the gas supply tube 44, rather than the shower part and gas supply tube being located on opposite ends as in independent claim 1. Therefore, Inokuchi fails to suggest a heating pipe with **one end connected to a first supply pipe and the other end connected to a shower part**.

FIG. 6



The Applicants, therefore, respectfully request that the rejection to Claim 1 under 35 U.S.C. §102(b) be withdrawn.

In addition, independent claim 1 recites the first source gas flowing through the heating pipe heated by heat radiated from the susceptor. The Examiner states that the wafer mounting plate or susceptor 120 is heated by the heater 70. However, Applicants respectfully submit that there is no support for this assertion in Inokuchi and the Examiner does not point out where this is disclosed in the reference. In column 4, lines 64-66, Inokuchi states rather "a reaction gas is supplied from the gas supply hole 41 while being heated by the heater 70", which does not correspond with the susceptor of independent claim 1. Therefore, the source gas in Inokuchi is not "heated by heat radiated from the susceptor" as in independent claim 1.

Further, the wafer of independent claim 1 is heated by the susceptor. In Inokuchi, the wafer is heated by a heater disposed outside the chamber. Therefore, there is no indication that the susceptor is hotter than the wafer in Inokuchi.

The Applicants, therefore, respectfully request that the rejection to Claim 1 under 35 U.S.C. §102(b) be withdrawn for these additional reasons.

Claims 3, 10 and 16, dependent on independent claim 1, are patentable for the reasons stated above with respect to claim 1 as well as for their own merits.

Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejection to independent claim 1 and all claims dependent thereon.

Shim

Claims 1 and 16 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Shim et al, US Patent Application Publication 2003/0041804 A1. Applicants respectfully traverse this rejection for the reasons detailed below.

Shim, as relied upon by the Examiner, fails to anticipate or suggest a heating pipe that has one end connected with the first supply pipe, the other end connected with the shower part, and the

heating pipe passing around the susceptor as recited in independent claim 1. The Examiner does not point out a separate supply pipe from the heating pipe as in independent claim 1. In FIG. 2 of the instant application, the heating pipe 250 and the gas supply pipes 242 and 244 are clearly two different pipes serving two different functions. The gas injection pipe 130 in Shim serves as a gas supply pipe and a heating pipe. As is clear from FIG. 2A, the gas inlet of Shim is not a separate supply pipe. Independent claim 1 states that "the heating pipe has one end connected with the first supply pipe". Therefore, the gas injection pipe 130 cannot correspond with both the heating pipe 250 and gas supply pipes 242 and 244 in FIG. 2.

The Applicants, therefore, respectfully request that the rejection to Claim 1 under 35 U.S.C. §102(e) be withdrawn.

Independent claim 1 also states that "the heating pipe passes around the susceptor". As is clear from FIG. 2A below, the heating pipe does not pass around the susceptor, but rather passes over only half of the space above the susceptor. When comparing FIG. 2A of Shim with FIG. 2 of the present application, it is clear that the gas injection pipe 130 does not pass around the susceptor as the heating pipe 250 does in independent claim 1.

FIG. 2A of Shim

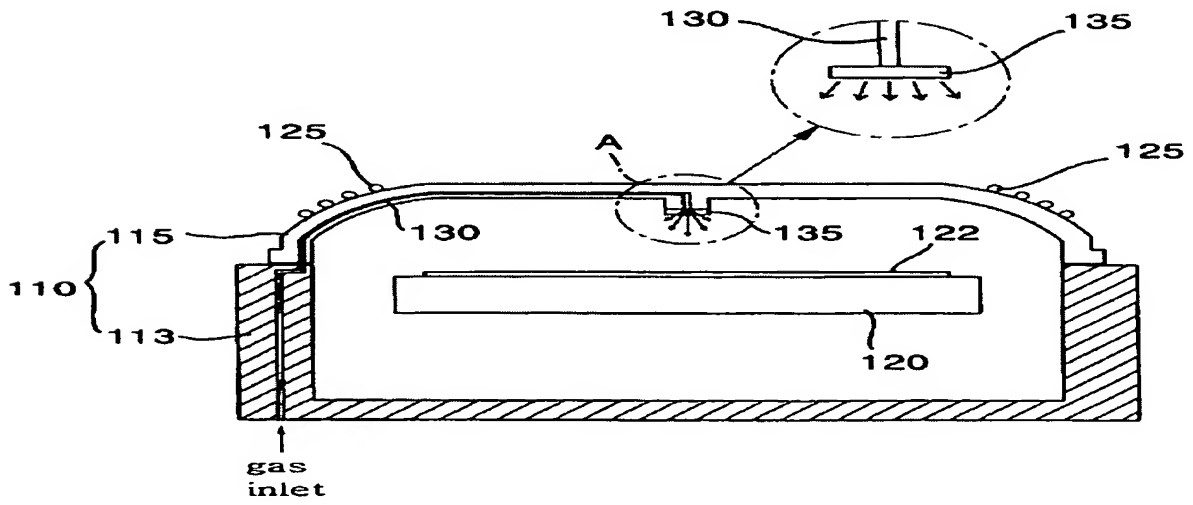
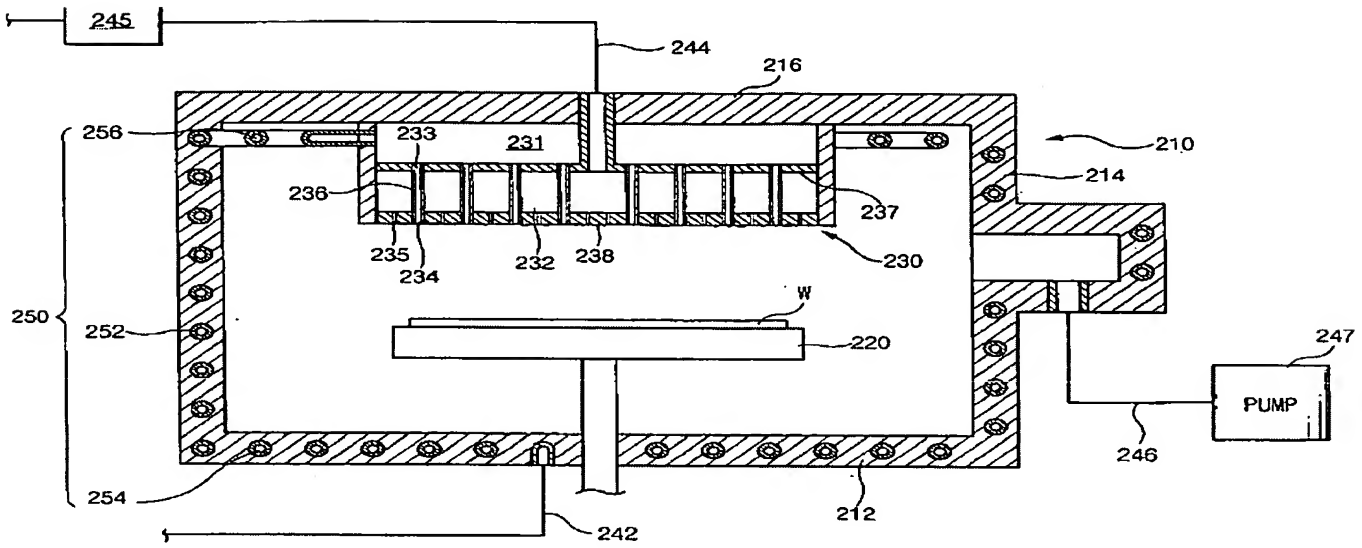


FIG. 2 of Present Application



In addition, independent claim 1 states "the first source gas flowing through the heating pipe is heated by heat radiated from the susceptor". Paragraphs [0029] – [0030] of Shim state "the gas injection pipe 130 is heated by the heat generated from the RF coil 125...Accordingly, before the process gas injected through the gas injection pipe 130 is sprayed into the internal space of the reaction chamber 110, it is pre-heated". The process gas in Shim is preheated by the pipe, which is heated by the RF coil, rather than the susceptor as in independent claim 1.

Further, the wafer of independent claim 1 is heated by the susceptor. In Shim, the wafer is heated by a heater disposed outside the chamber. Therefore, there is no indication that the susceptor is hotter than the wafer in Shim.

The Applicants, therefore, respectfully request that the rejection to Claim 1 under 35 U.S.C. §102(e) be withdrawn for these additional reasons.

Claim 16, dependent on independent claim 1, is patentable for the reasons stated above with respect to claim 1 as well as for their own merits.

Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejection to independent claim 1 and all claims dependent thereon.

Rejections under 35 U.S.C. § 103

Claims 1 and 3-11 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Shim et al, US Patent Application Publication 2003/0041804 A1, in view of Sakamoto et al, US Patent 5,968,593. Applicants respectfully traverse this rejection for the reasons detailed below.

Applicants respectfully submit that it appears the Examiner made a mistake in including claim 1 in this rejection because the discussion in the Office Action appears to refer to dependent claim 3. As previously described, Shim and Sakamoto fail to anticipate or suggest at least the feature of "wherein the heating pipe has one end connected with the first supply pipe, the other end connected with the shower part, the heating pipe passing around the susceptor" as recited in claim 1. Dependent claims 3-11 depend from independent claim 1 and therefore include the features of independent claim 1.

Even assuming, *arguendo,* that Shim and Sakamoto were combinable (which Applicants do not admit), Applicants submit that none of the cited references, either alone or in any proper combination, cure the deficiencies of Shim and/or Sakamoto with respect to at least the previously identified feature of independent claim 1.

The Applicants, therefore, respectfully request that the rejection to Claims 1 and 3-11 under 35 U.S.C. § 103(a) be withdrawn.

CONCLUSION

In view of the above remarks and amendments, the Applicants respectfully submit that each of the pending objections and rejections has been addressed and overcome, placing the present application in condition for allowance. A notice to that effect is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to contact the undersigned.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Erin G. Hoffman, Reg. No. 57,752, at the telephone number of the undersigned below.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 08-0750 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

HARNESS, DICKEY, & PIERCE, P.L.C.

By _____

John A. Castellano, Reg. No. 35,094
P.O. Box 8910
Reston, Virginia 20195
(703) 668-8000

JAC/EGH:ald